
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: MOSTAFAZADEH et al.

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Application No.: 10/016,750

Examiner: Jarrett J. Stark

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Group: 2823

Title: LEAD FRAME DESIGN FOR INCREASED CHIP Confirmation No.: 5469
PINOUT

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Kathryn Throckmorton

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REQUEST FOR REHEARING (37 C.F.R. § 41.52)

Dear Sir:

Appellant hereby requests Rehearing of the Decision of the Board, issued on August 27, 2009.

Respectfully submitted,
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TABLE OF AUTHORITIES

- *Ex Parte Eggert*, 67 USPQ2d 1716 (Bd. Pat. App. & Inter. 2003)
- *Ex Parte Liebermann*, No. 2007-0012, 2007 WL 5211672 (BPAI 2007)
- *Hester Indus., Inc. v. Stein, Inc.*, 142 F.3d 1472, 1482-83 (Fed. Cir. 1998)
- *North Am. Container, Inc. v. Plastipak Pkg., Inc.*, 415 F.3d 1335, 1349 (Fed Cir. 2005)

Introduction

The Decision on Appeal dated August 27, 2009 affirmed the outstanding rejection of claims 11-23 under 35 USC 251 as improperly recapturing surrendered subject matter. It is respectfully submitted that the affirmation of the outstanding rejections was based on a clearly erroneous finding outlined in the Decision on Appeal. Furthermore, it is respectfully submitted that when considered in light of a proper finding, it is clear the claims may not be properly rejected under the recapture doctrine under the case law relied on in the Board's decision.

Issue

Whether the reissue claims were **materially** narrowed in "other" respects in the context of the third step of the three-step process used to determine the proper application of the recapture rule set forth in *North Am. Container, Inc. v. Plastipak Pkg., Inc.*, 415 F.3d 1335, 1349 (Fed Cir. 2005).

Background

The principles of law relied on in the Board's Decision are outlined at pages 11-12 of the Decision on Appeal. The Decision cites *North Am. Container*, for the proposition that the recapture rule is applied as a three-step test. (Bd. Dec. p. 11). The Decision on Appeal then states and the Applicant agrees that it is undisputed that the first two steps of the test are met. That is, (1) the reissue claims are broader than the patented claims with respect to the attachment pad limitation (i.e., by omitting the requirement that the pads have circular portions), and (2) this broadening relates to the subject matter surrendered during prosecution of the original patent. (Bd. Dec. p. 12). The Decision on Appeal then identified the issue as follows:

the dispute before us hinges on the third prong of the test outlined in *North American Container*, namely whether the reissue claims were **materially narrowed** in other respects so as to avoid the recapture rule. (Bd. Dec. p. 12, *emphasis ours*)

The Board Decision further cites *Hester*¹ for the proposition that: “[a] limitation “materially narrows” the reissue claims if the narrowing limitation is directed to one or more “overlooked aspects” of the invention.” (Bd. Dec. p. 11) In the Analysis, the Board Decision acknowledges that specific limitations identified in the briefs: (a) narrow the scope of the issued claims in a manner distinct from the attachment pad feature (Bd. Dec. p. 15); and (b) that these limitations were “overlooked”. (Bd. Dec. pp. 15-16). Nevertheless, the Decision states that the added limitations do not **materially** narrow the claims. (Bd. Dec. p. 16 – emphasis original). It is respectfully submitted that this determination by the board (1) is clearly erroneous based on the facts of the case; and (2) contradicts the determination of patentable subject matter made by the Examiner.

Overview of Argument

Our first argument is very simple. As will be explained in more detail below – without the overlooked narrowing limitations, the various independent claims would clearly NOT be patentable. Just as clearly, with the cited narrowing language, the claims patentably distinguish the prior art. It is respectfully submitted that claim limitations that render an otherwise invalid claim valid are clearly “material” under any reasonable interpretation of the term “material.” Indeed, it is respectfully submitted that this is the very definition of materiality in

¹ *Hester Indus., Inc. v. Stein, Inc.*, 142 F.3d 1472, 1482-83 (Fed. Cir. 1998).

patent matters and exactly the type of materiality that was contemplated by the court in *Hester Indus., Inc. v. Stein, Inc.*, 142 F.3d 1472 (Fed. Cir. 1998).

Analysis of Claim 11

For demonstrative purposes, pending claim 11 is reproduced below in a format that strikes through all of the language that was **added** to claim 11 that is distinct from claim 1 of the original patent as it appeared either during prosecution or as issued. Stricken portions of the claim that correspond to elements in dependent claims are italicized:

11. An integrated circuit package comprising:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, ~~wherein bottom surfaces of the die attach platform, the contacts and the bus bar are substantially co-planar~~, and wherein each of the contacts includes a portion that forms an attachment pad;

~~a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts (Claims 4 and 5) ; and~~

~~a protective casing covering the die and the lead frame (Claim 9) while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts, whereby the attachment pads are exposed at the bottom surface of the package.~~

It can be seen that many – if not most - of the limitations of appealed claim 11 are new when compared to original claim 1. If one were to eliminate the newly presented language, the claim would simply read:

11. (Reduced) An integrated circuit package comprising:

a lead frame including -

a die attach platform,

a plurality of contacts that are spaced apart from the die attach platform, and
 a bus bar that is positioned between the die attach platform and
 at least some of the contacts, and
 wherein each of the contacts includes a portion that forms an
 attachment pad.

In this reduced form, the claim is effectively directed only at a lead frame – as opposed to an integrated circuit package. Japanese reference number 5-121631 (hereinafter “Kawakami”) – which is of record² – describes a lead frame that would either anticipate or render such a claim obvious. To better illustrate this point, Figures 1 and 2 from the Kawakami reference are reproduced below.

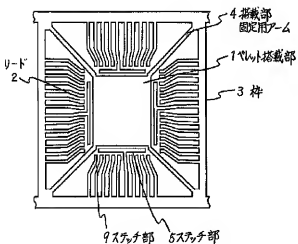


FIGURE 1

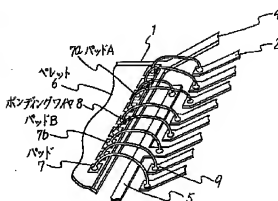


FIGURE 2

As can be seen in the Figures reproduced above, Kawakami discloses a lead frame 3 having a die attach pad 1, a plurality of leads 2 that are spaced apart from the die attach pad, and a bus bar 5 positioned between the die attach pad 1 and at least some of the leads 2. Although the lead frame is not shown incorporated into an integrated circuit package, it is respectfully submitted that anyone with familiarity

² The Kawakami reference – Japanese Publication No. 5-121631 was cited in the first office action dated January 21, 1999 in the original application which matured into U.S. Patent 6,034,423 – which is the subject of the present reissue application.

in the art (i.e., familiar with lead frame based packaging at the time the original application was filed) would realize that the proximal ends of the leads 2 (i.e., the ends farthest from the die attach platform) are intended be used as pins to attach the package to a printed circuit board or other suitable platform. Accordingly, without the new language presented in reissue claim 11, the claim would clearly NOT be patentable over the art of record.

In contrast, claim 11 is clearly directed at patentable subject matter. There are NO art based rejections on appeal. Indeed, the Examiner NEVER entered any art based rejections of any of the appealed claims 11-23. That isn't surprising because the claims clearly distinguish the prior art. It is noted, for example, that nothing in the art of record suggests the use of the Kawakami lead frame (or any of the other lead frame art) in a package in which a bottom surface of a bus bar portion of a lead frame is exposed on a bottom surface of an integrated circuit package together with the bottom surfaces other lead frame components (i.e., the die attach pad and the contacts) in the manner set forth in the claims.

The significant features of claim 11 that add to the combination to patentably distinguish the Kamikawa reference are all features that the Board has agreed were directed at "overlooked" aspects of the invention that were not present in the issued claims of the '423 patent³ (Bd. Dec. pp. 15 & 17). These include:

- a) the bottom surfaces of the die attach platform, the contacts and the bus bar being substantially co-planar;
- b) a protective casing that covers the die and lead frame and physically isolates the bus bar from at least some of the conductive contacts; and

³

Page 17 of the Decision on Appeal states:

"We recognize that these incidental features may have been "overlooked" in the sense that they were not originally claimed, and adding them to a reissue claim narrows the claim. But including incidental features in a reissue claim that otherwise recaptures surrendered subject matter does not *materially* narrow the claim to avoid impermissible recapture."

- c) the bottom surfaces of the die attach platform, the bus bar and the contacts being exposed at the bottom surface of the package.

Since the combination of these “overlooked” elements work together to take a claim that would clearly be unpatentable without the limitations to a patentable form – it is respectfully submitted that such limitations cannot be considered “incidental” features of the claim. Rather they are clearly material features that are material to the patentability of claim 11.⁴ Stated another way, since claim 11 would clearly NOT be patentable without the limitations that the original Board Decision concedes were “overlooked” (*See, e.g., Bd. Dec. pp. 15-16 & p. 17*) - it is respectfully submitted that: (1) claim 11 is clearly directed towards a different invention than the original patent; and (2) claim 11 was “materially” narrowed with respect to aspects that were “overlooked” during the original prosecution. In view of the foregoing, it is respectfully submitted that the Board’s determination that the additional limitations are mere “incidental” features that do not materially narrow the claim to avoid impermissible recapture (*Bd. Dec. p. 17*) is clearly erroneous.

The determination that the additional limitations of claim 11 did not materially narrow the reissue claims was the basis for holding that claims 11-14 were subject to the recapture rule. Accordingly, if after reconsideration, the Board

⁴ It is noted that some of the dependent claims in the original patent required an “integrated circuit chip mounted on said die attach platform.” *See, e.g.,* claims 4 and 5 in the original patent. And dependent claim 9 generally required a protective casing. Therefore, there is a question regarding whether the requirements in claim 11 (a) that the die be carried by the die attach platform, and (b) the broad recitation of a protective casing in general, are “overlooked” aspect of the invention in the context of a *Hester* analysis. The actual analysis provided by the Federal Circuit in *Hester* focused only on whether there were patentable distinctions between original claim 1 (which was presumably the broadest claim in the original patent) and the reissue claims, and whether the allegedly overlooked features were included in claim 1. *Hester*, 46 USPQ2d 1641,1650. That is submitted to be the appropriate analysis because the test is whether the reissue claims are materially narrower in a respect that is distinct from the broadened subject matter. Thus, it is submitted that even the die carrying and protective casing features are narrowing features in the context of a *Hester* analysis. However, the answer to that question does not have any impact on the issue at hand because the mere addition of a requirement that the die be carried by a die attach platform, and/or the mere addition of a protective casing, standing alone, clearly would not render the reduced version of claim 11 patentable.

agrees with the Applicant that the additional limitations presented in claim 11 do in fact materially narrow the reissue claims – the case law cited in the opinion dictates the conclusion that the recapture rule does not apply to claims 11 for at least this reason. Therefore, it is respectfully submitted that the outstanding rejection of claim 11 under 35 USC 251 should be reversed for at least this reason.

Independent claim 19

Independent claim 19 has a very different scope than independent claim 11. Specifically, claim 19 is directed at an electronic module including an integrated circuit having a ground pad that is electrically coupled to a die attach pad. The die attach pad, in turn, is exposed on the bottom surface of the package along with the contacts, and is directly electrically connected to ground on a printed circuit board substrate. Analogously to the situation described above with respect to claim 11, the features of claim 19 that make it patentable are very different than the features relied on for patentability of claim 1 in the original patent, and the features that are common between claim 1 of the original patent and rejected claim 19 are clearly not patentable. Accordingly, it is respectfully submitted that claim 19 is directed at a very different invention than the original patent claims and that recapture is therefore not present.

For demonstrative purposes, pending claim 19 is reproduced below in a format that strikes through all of the language that was **added** to claim 19 that is distinct from claim 1 of the original patent.

19. An electronic module comprising an integrated circuit package ~~and a printed circuit board, the printed circuit board having a ground, wherein the integrated circuit package comprises:~~
a lead frame including a die attach platform and a plurality of contacts, ~~wherein bottom surfaces of the die attach platform and the contacts~~

are substantially co-planar, the die attach platform being directly electrically connected to the ground on the printed circuit board;

a die carried by the die attach platform, the die having a plurality of signal pads that are electrically connected to at least some of the contacts, and at least one ground pad that is electrically connected to the die attach platform; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the die attach platform from at least some of the conductive contacts, and wherein the exposed bottom surfaces [portions] of the contacts form attachment pads.

If one were to eliminate the newly presented language relative to original claim 1, the claim would simply read:

19. (Fully Reduced) An integrated circuit package, wherein the integrated circuit package comprises:

a lead frame including a die attach platform and a plurality of contacts;; and

wherein [portions] of the contacts form attachment pads.

Clearly, such a claim would NOT be patentable. In contrast, the Examiner has acknowledged that claim 19 as presented is directed at patentable subject matter. Therefore, it is respectfully submitted that claim 19 is clearly directed at a different invention than original claim 1 and that the additional features that the have been introduced as part of claim 19 are clearly “material.”

It is noted, that original dependent claim 5 in the original patent does require both (a) “an integrated circuit chip mounted on said die attach pad;” and (b) that the chip include “a plurality of ground I/O pads” that “are electrically connected to said die attach platform.” Separately, original dependent claim 9 does broadly require a protective casing that encapsulates the lead frame and the integrated circuit chip (die). (Note – however, that original claim 9 does NOT

require (or even suggest) leaving bottom surfaces of any component of the lead frame exposed on the bottom surface of the package). See, e.g., claims 5 and 9 in the original patent. Therefore, there is a question regarding whether these elements of claim 19 constitute “overlooked” aspects of the invention in the context of a *Hester* analysis.

It is respectfully submitted that each of these features, were “overlooked” aspect of the invention in the context of a *Hester* analysis. For illustrative purposed, consider the requirement that **ground pads on the die are electrically connected to the die attach pad**. Initially, a review of the file history of the original patent shows that neither the Examiner, nor the prosecuting attorney ever focused on – or even mentioned – this element of issued claim 5 during the prosecution of the original patent.⁵ Given that there was no discussion whatsoever of this feature during the prosecution of the ‘423 patent, it is respectfully submitted that the feature was truly an “overlooked” aspect of the invention.

Furthermore, it is respectfully submitted that the focus in the analysis of claim elements that were overlooked should be on the broadest version of the claims being broadened in reexamination. Indeed, that is exactly what was done in *Hester*. Specifically, it should be noted that the actual analysis provided by the Federal Circuit in *Hester* focused only on whether there were patentable distinctions between original claim 1 (which was presumably the broadest claim in the original patent) and the reissue claims, and whether the allegedly overlooked features were included in claim 1. See, *Hester*, 46 USPQ2d 1641,1650. This is submitted to be the appropriate analysis because the test is whether the reissue claims are materially narrower in a respect that is distinct from the broadened

⁵ Issued claim 5 of the ‘423 patent was claim 4 during prosecution of the original patent. The initial (and only) office action in the original patent application – dated January 1, 1999 – did not even address the requirement of claim 4 that ground pads on the IC be electrically coupled to the die attach pad. Similarly, the response/amendment mailed on July 8, 1999 did not amend, separately argue, or even reproduce claim 4.

subject matter. Thus, it is submitted that all of the elements of claim 19 that do not have corresponding elements in claim 1 of the original patent were “overlooked” features in the context of a *Hester* analysis.

However, even if the Board were to take the position that the elements of claim 19 that have corresponding elements in dependent claims 5 and 9 are not “overlooked” in the context of the *Hester* analysis, the other elements that the board has already acknowledged were “overlooked” are clearly material. To illustrate the point, a partially reduced version of claim 19 that eliminates only the features that do not have corresponding elements in ANY of the claims of the original patent is provided below:

19. (Partially Reduced) An electronic module comprising an integrated circuit package, wherein the integrated circuit package comprises:

a lead frame including a die attach platform and a plurality of contacts;

a die carried by the die attach platform, the die having a plurality of signal pads that are electrically connected to at least some of the contacts, and at least one ground pad that is electrically connected to the die attach platform; and

a protective casing covering the die and the lead frame, and wherein [portions] of the contacts form attachment pads.

Once again, such a claim is clearly NOT patentable. The present invention is not the first to electrically connect a ground pad on a die to a lead frame die attach pad. Rather, it is the combination of these elements with the added – previously overlooked – claim elements that make the claim patentable. As identified in both the Boards Decision (Bd. Dec. p. 22) and the Reply Brief (Rep. Br. p. 5), the following elements that were not present in ANY of the issued claims of the ‘423 patent:

- (a) the bottom surfaces of the die attach platform and the contacts are substantially co-planar;

- (b) a protective casing that covers the die and lead frame and physically isolates the die attach platform from at least some of the conductive contacts;
- (c) the bottom surfaces of the die attach platform and the contacts are exposed at the bottom surface of the package;
- (d) the die attach platform is directly electrically connected to a ground on a printed circuit board.

Since the addition of these elements make an otherwise unpatentable claim patentable – it is respectfully submitted that they cannot be considered incidental to the claimed invention. Rather they are clearly material elements that are material to the patentability of claim 19. As such, it is respectfully submitted that the outstanding rejection of claim 19 under 35 USC 251 should be reversed for at least this reason.

Independent claim 23

Independent Claim 23 is generally a narrower version of claim 11. With the primary difference being the last clause which recites that the integrated circuit package may be attached to a substrate by soldering the attachment portions of the lead frame to the substrate. Therefore, claim 23 is respectfully submitted to avoid the recapture rule for at least the same reasons discussed above with respect to claim 11.

Discussion of Dependent claims 12-18

Claims 12-18 each depend directly or indirectly from claim 11 and accordingly, it is respectfully submitted that these claims also avoid the recapture rule for at least the same reasons discussed above with respect to claim 11.

Furthermore, the Reply Brief identifies specific features of dependent claims 15, 16, 17 and 18 that materially narrow the reissue claims. (Reply Br. Pp 6-7) For brevity, those arguments will not be repeated in full herein. However, it is believed that the materiality of those dependent features is more readily

appreciated in view of the discussions of the materiality of various features of the independent claims discussed above.

Claims 15 and 16

Particular attention is drawn to the features of dependent claims 15 and 16 that require that the die attach pad exposed on the bottom surface of the package be directly electrically connected to ground on a printed circuit board. The significance of this feature was discussed above with respect to independent claim 19. As explained above, none of the art of record describes or suggests a combination in which an exposed die attach pad that is coplanar with exposed contacts on the bottom surface is mounted on a printed circuit board and used as the ground pad. Accordingly, it is respectfully submitted that these claim elements can not fairly be called incidental features.

Claims 17 and 18

Particular attention is also drawn to the limitations of dependent claims 17 and 18 which are directed at electronic modules in which the integrated circuit package of claim 11 is actually mounted on a printed circuit board with the bus bar(s) that are exposed on the bottom surface of the package being directly electrically connected to the printed circuit board. It is respectfully submitted that none of the art of record describe either of these features. The ability to directly solder a bus bar exposed on the bottom surface of a package directly to a substrate such as a printed circuit board is a very novel feature of the arrangements recited in independent claims 11 and 23. Accordingly, it is respectfully submitted that these claim elements can not fairly be called incidental features.

Discussion of Dependent claims 20-22

Dependent claims 20, 21 and 22 each depend directly from independent claim 19 and it is respectfully submitted that the outstanding rejection of claims

20, 21 and 22 under 35 USC §251 should be reversed for at least the reasons set forth above with respect to claim 19. Additionally, claim 20 specifically requires that the die attach platform be directly electrically connected to the ground on the printed circuit board. Claim 21 specifically requires a bus bar that is directly electrically connected to a printed circuit board. Claim 22 specifically requires a plurality of bus bars that directly electrically connected to the printed circuit board. As described in detail above, these limitations each materially narrow the claim scope. Accordingly, it is respectfully submitted that claims 20, 21 and 22 should not be barred by the recapture rule for these reasons as well.

In re Eggert

Some of the arguments presented in both the Appeal Brief and the Reply Brief were based on MPEP §1412.02 (I)(C)(2)(d) and the precedential board opinion *Ex Parte Eggert*, 67 USPQ2d 1716 (Bd. Pat. App. & Inter. 2003). As pointed out by the board (and unbeknownst at the time to the undersigned) the patent office policy regarding recapture changed at some point and the office apparently has chosen to no longer follow *Eggert*. (Bd. Dec. p. 14) This new policy appears to have been first published in the MPEP at about the same time the final office action was entered in the present case. The Decision on Appeal cites *Ex Parte Liebermann* as its authority for the proposition that *Ex Parte Eggert* is no longer viable law. (Bd. Dec. p. 14).

When the undersigned reviewed *Ex Parte Liebermann* at the location identified in the Decision on Appeal, the first page states that *Ex Parte Liebermann* is **non-precedential**. It is respectfully submitted that the board, and indeed the office as a whole, is supposed to follow its own precedent unless or until it is overturned in a precedential opinion. Thus, it is respectfully submitted that *Ex Parte Eggert* is still valid precedent that should be followed by the board.

Furthermore, it is respectfully submitted that the logic set forth in *Ex Parte Liebermann* for ignoring *Eggert* is fundamentally flawed. Specifically, *Liebermann* takes the position that *Eggert* is inconsistent with the rationale expressed in *North American Container*. It is respectfully submitted that *Liebermann* simply misconstrues the holding in *North American Container*. The fundamental premise of the reissue recapture doctrine is now, and has long been that one may not recapture a claim scope that was given up during prosecution. *Eggert* relates to a situation where a reissue claim seeks to broaden a limitation that was introduced or argued during prosecution. In short, *Eggert* held that a reissue claim can broaden a limitation introduced during prosecution but can not completely eliminate such a limitation unless the claim has been materially narrowed in other respects. In contrast, *North American Container* relates to a situation in which the Applicant sought to completely eliminate a limitation argued during prosecution. Thus, it is respectfully submitted that *North American Container* does not relate to, or even address the broadening issue discussed in *Eggert*. In view of the foregoing, it is respectfully submitted that *Eggert* is still good law and that the outstanding rejections under 35 USC §251 should also be reversed because the claims only broaden, but do not eliminate the claimed attachment pad feature.

Closing Comments

During preparation of this request for reconsideration, the undersigned obtained an English language machine translation of the Kawakami reference. It is believed that the drawings in the Japanese version were perfectly clear as to the teachings of Kawakami, but in an abundance of caution, the machine translation of Kawakami that we obtained is submitted herewith in an information disclosure statement.

In view of the forgoing, it is respectfully submitted that the outstanding rejections of claims 11-23 should be reversed.

Respectfully Submitted,
BEYER LAW GROUP LLP

/Steve D Beyer/

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CLAIMS APPENDIX

CLAIMS ON APPEAL

11. An integrated circuit package comprising:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, wherein bottom surfaces of the die attach platform, the contacts and the bus bar are substantially co-planar, and wherein each of the contacts includes a portion that forms an attachment pad;

a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts, whereby the attachment pads are exposed at the bottom surface of the package.

12. An integrated circuit package as recited in claim 11 wherein the bus bar is a first bus bar, the integrated circuit further comprising a second bus bar that is also positioned between the die attach platform and some of the contacts.

13. An integrated circuit package as recited in claim 12 wherein the first and second bus bars are located on opposite sides of the die attach platform.

14. An integrated circuit package as recited in claim 11 further comprising bonding wires for electrically connecting the die to the bus bar and the contacts.

15. An electronic module comprising:

an integrated circuit package as recite in claim 11 wherein ground pads on the die are electrically connected to the die attach platform; and

a printed circuit board, wherein the die attach platform is directly electrically connected to a ground on the printed circuit board.

16. An electronic module as recited in claim 15 wherein the die attach platform is directly electrically connected to the ground on the printed circuit board by soldering.

17. An electronic module comprising:

an integrated circuit package as recite in claim 11; and

a printed circuit board, wherein the bus bar is directly electrically connected to the printed circuit board.

18. An electronic module as recited in claim 17 wherein the bus bar is a first bus bar, the integrated circuit further comprising a second bus bar that is also positioned between the die attach platform and some of the contacts and wherein both the first and second bus bars are directly electrically connected to the printed circuit board.

19. An electronic module comprising an integrated circuit package and a printed circuit board, the printed circuit board having a ground, wherein the integrated circuit package comprises:

a lead frame including a die attach platform and a plurality of contacts, wherein bottom surfaces of the die attach platform and the contacts are substantially co-planar, the die attach platform being directly electrically connected to the ground on the printed circuit board;

a die carried by the die attach platform, the die having a plurality of signal pads that are electrically connected to at least some of the contacts, and at least one ground pad that is electrically connected to the die attach platform; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the die attach platform from at least some of the conductive contacts, and wherein the exposed bottom surfaces of the contacts form attachment pads.

20. A module as recited in claim 19 wherein the die attach platform is directly electrically connected to the ground on the printed circuit board by soldering.

21. A module as recited in claim 19 wherein the lead frame further includes a bus bar positioned between the die attach platform and at least some of the contacts, and wherein the bus bar is directly electrically connected to the printed circuit board.

22. A module as recited in claim 19 wherein the lead frame further includes a plurality of bus bars positioned between the die attach platform and at least some of the contacts, and wherein each bus bars directly electrically connected to the printed circuit board.

23. An integrated circuit package comprising:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, wherein bottom surfaces of the die attach platform, the contacts and the bus bar are substantially co-planar, wherein each of the contacts includes a portion that forms an attachment pad;

a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts; and

wherein the integrated circuit package may be attached to a substrate by soldering the attachment portions of the lead frame to the substrate.